Textocracy, or, the Cybernetic Logic of French Theory

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Abstract: This essay situates the emergence of cybernetic concepts in postwar French thought within a longer history of struggles surrounding the technocratic reform of French universities, including Marcel Mauss's failed efforts to establish a large-scale center for social scientific research with support from the Rockefeller Foundation, the intellectual and administrative endeavors of Claude Lévi-Strauss during the 1940s and 1950s, and the rise of communications research in connection with the *Centre d'Etudes des Communications de Masse* (CECMAS). Although semioticians and poststructuralists used cybernetic discourse critically and ironically, I argue that their embrace of a "textocratic" perspective—that is, a theory of power and epistemology as tied to technical inscription—sustained elements of the technocratic reasoning linked to these efforts dating back to the 1920s to reform French universities.

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Any history of cybernetics and information theory that seeks more than a mere inventory of influences—i.e. of natural sciences impacting the social sciences, or engineering projects by the U. S. military projecting their models onto the softer social and human sciences—must grapple with its simultaneous origins and multiple itineraries. In broad strokes, cybernetics and its sister science, information theory, emerged in the 1940s and early 1950s from the mathematical sciences and focused on the technological engineering of communication, feedback, and coding mechanisms to facilitate transmissions in organic and inorganic systems. Although both fields found impetus in the engineering tasks of World War II, their significance in subsequent decades bespeaks their ability to address a larger family of concerns that exceeded the exigencies of war. Their particular status as a topic for the history of the human sciences, and indeed these fields' broader acclaim in the mid-century sciences (when many of its proposed technological applications depended on the hypothetical use of computational power that would not be available for decades to come), springs from their emergence as tools of interdisciplinary research. The emergence of cybernetics as an "umbrella" or "universal" science in the 1950s and 1960s depended on a certain plurality, including roots sunk deep in ostensibly non-cybernetic sources and the gradual cultivation of cybernetic ideas in disparate milieus according to local intellectual conditions (Bowker, 1993; Kline 2015; Pias 2004; Turner 2006).[i] Considered up close and according to local circumstances, what looked at moments like the triumph of a master cybernetic discourse born of World War II and the Cold War (Haraway 1981-1982; Galison 1994; Pickering 1995; Edwards 1996) begins to look more like a kind of pidgin whose development was closely related to the intermingling, bastardization, and reworking of material, often with elements of resistance, appropriation, and subversion as integral elements in the accommodation of the cybernetic lexicon to a new intellectual milieu (Haraway 2004; Light 2003).

The city of Paris offers one site for reconstructing the plurality of cybernetics (Le Roux 2018). Here we see the inception of cybernetics in a complex milieu that defies easy reduction to origins dubbed American or French, technical or cultural, scientific or social. In 1947 MIT mathematician Norbert Wiener, a fluent French speaker, traveled to Paris for a conference on harmonic analysis organized by Szolem Mandelbrojt, the eminent Polish-born mathematician (uncle to Benoît) (Conway and Siegelman, 2005: 171-172). Szolem had spent much of World War II at the Ecole Libre des Hautes Etudes, a wartime university based in New York City that was sponsored by the French, Belgian, and Czech-Slovak governments-in-exile and funded in large part by the Rockefeller Foundation, which viewed the Ecole as an opportunity for reforming European science in alignment with the pragmatic and technocratic agendas of promoted by American Progressive Era private foundations. Officers at the Rockefeller Foundation also sought to cultivate alliances between American and distinguished European researchers—and, to some extent, to build the rudiments of a European research network tilting towards American institutions (Zolberg and Callamard, 1998; Geoghegan, 2011; Geoghegan 2012: 96-137). Per the Rockefeller Foundation's plans, following the war Mandelbrojt had returned to his prestigious post as a professor of mathematics at the College de France, forging new relations between French and American mathematical communities in the process.

During his trip to the conference Wiener met with Enrique Freymann, the French-Mexican editor of *Hermann et Cie* publishing, telling him of his nascent ideas on computing, communication, and feedback in humans and machines. "Why don't you write a book on the theories that you are always talking about?" Freymann asked Wiener, eliciting the reply: "No publisher would ever take such a risk!" Freymann slyly replied, "Oh, I think he might." The two men shook hands, with Wiener promising "In three months' time I shall hand over my manuscript." Almost impetuously, Wiener began writing what became *Cybernetics: Or Control and Communication in the Animal and the*

Machine, which Freymann ultimately contracted to publish. When editors at MIT Press and Wiley & Co. learned of the book they leaped to secure its rights, leading to simultaneous publications of the book in France and the United States in October 1948 (Conway and Siegelman, 2005: 171-172; Mindell, Gerovitch and Segal, 2002: 75).[ii]

By these cross-border itineraries cybernetics found its way to print—with the exhortations of a French-Mexican editor to a polyglot American scientist travelling to a French conference organized by a Polish-born scientist recently returned from his appointment at a Franco-Belgian-Czech-Slovak university based in New York City, and with a backdrop of funding from a US-based foundation with ambitions for global reform of society by means of scientific methods. Cybernetics' appeal to scientists of diverse disciplinary, linguistic, and national backgrounds throughout the 1950s and 1960s lay no doubt in these multi- and transnational origins, which lent its methods a cosmopolitan and transdisciplinary sheen. Historian Ron Kline has labelled the diverse meanings scientists elicited from this field as "the disunity of cybernetics," which he describes as "an ironic fate for a field that claimed to be an international, universal discipline that could unify the sciences" (Kline, 2015: 7). In the United States, for example, a cybernetic language of systems, feedback, and information served the militarist agendas of Cold War scientists as well as the leftwing antiauthoritarian aspirations of California hippies (as demonstrated by historians Paul Edwards and Fred Turner, respectively) (Edwards 1996; Turner 2006). Pace Eden Medina and Eglė Rindzevičiūtė, under the direction of Salvador Allende's administration in Chile in the 1970s cybernetics became a tool of socialist reform while also becoming an instrument of collaborative governance across the Iron Curtain among capitalist and socialist policymakers convening in Austria (Medina 2011; Rindzevičiūtė 2016). As a universal science. the cybernetic apparatus held together not so much around a single unified notion of communications or information as through the utility of notions drawn from information and communication technologies in translating varied concerns into a common language or framework.

The interdisciplinary reception, interpretation, and development of cybernetics in France responded to distinct intellectual exigencies. The cybernetic and informational analysis that penetrated deep into postwar French philosophy—particularly structuralist, poststructuralist, and semiotic intellectual formations—formed a "cybernetic matrix" born of conflicts and intellectual struggles specific to postwar France (Lafontaine, 2007). The popular fascination with technology that accompanied the Marshall Plan and the rapid postwar industrialization of France, a creeping dissatisfaction with humanist and existentialist philosophy, and the stirring of a new philosophy of language: these were among the diverse factors that lent to cybernetics a peculiar allure among some French intellectuals (Ross, 1995: 1-14, 157-196). Proponents and antagonists of Americanization, of Saussurean semiotics, and the industrial reforms spearheaded by American industry found resources in cybernetics to validate their philosophies and test the limits of their intellectual positions (Mindell, Gerovitch, and Segal, 2002: 74-81). Moreover, a longstanding admiration in France for engineering as an instrument of political reform, embodied in the political power afforded to engineers at the elite Ecole Polytechnique and dating at least to nineteenth-century utopian theorists such as Auguste Comte and the Saint-Simonians, established intellectual relays that would support the articulation of a cybernetic apparatus (Porter, 1996: 49-72; Tresch, 2012: 191-221, 253-286).

In recent years this reception has been an object of analysis by scholars including Céline Lafontaine, Lydia Liu, and Ronan Le Roux who have argued for the roots of structuralist and poststructuralist thought in cybernetics (Lafontaine, 2004; Le Roux 2007; Le Roux 2009; Liu, 2010). These important analyses have, however, presumed an undue level of identity and unity in cybernetics, thereby effacing the contentious political stances that mediated the reception of

cybernetics by French intellectuals (Cusset, 2005: Johnson, 2015). In so doing, these accounts gloss over the political insights and scientific ambitions of cybernetics' French interpreters. Like British cultural theorist Stuart Hall's celebrated reinterpretation of information theorists' notions of "encoding" and "decoding" in a Marxist fashion, postwar French theorists' reinterpretations of cybernetics and information theory offered "radically different wine in what at first appeared to be old [cybernetic] bottles," where continuity in terminology masked the subversion of shared conceptual paradigms (Gurevitch and Scannell, 2003: 245). French cultural theorists employed information theories to reflect on the communicative production of economics, politics, and psychology while, often simultaneously, reflecting on the economical, political, and cultural constitution of techno-scientific accounts of communications.

This article considers the reception of cybernetics in France through a series of intellectual moments, which together chart the intellectual currents that directed the uptake of cybernetic reasoning in France after World War II. Wiener's inspiration to write a book about cybernetics marks one privileged moment when French and American currents crossed to produce cybernetics, but that moment appears within a longer series dating back to the 1920s and persisting well into the 1970s. In the pages that follow, the earliest moment under consideration is French sociologist Marcel Mauss's failed efforts to establish a large-scale center for social scientific research with support from the US-based Rockefeller Foundation, an institution that prominently promoted information theory and cybernetics in the years after World War II (Geoghegan, 2011; Geoghegan 2017). Mauss's failure to reach an accord with the Rockefeller Foundation casts light on a subsequent moment, in the 1950s, when Franco-Belgian anthropologist Lévi-Strauss and Jacques Lacan selectively adapted elements of cybernetic thought to postwar French thought, in part through Lévi-Strauss's links to the Rockefeller Foundation and his innovative rereading of Mauss's social theory. The next moment under consideration is the tentative, ironic application of cybernetics and information theory in the early 1960s by Roland Barthes and other affiliates of the *Centre d'Etudes des Communications de Masse* (CECMAS). Despite their success in developing a critical, historical, and political outlook that called into question the politics of cybernetic reason, their embrace of a "textocratic" perspective—that is, a theory of power and epistemology as tied to technical inscription—sustained elements of the technocratic logic undergirding cybernetics and the Rockefeller Foundation agenda.

The Difficulties of Gift-Giving

In 1949, in a successful bid to win research funding from the Rockefeller Foundation, linguist Roman Jakobson embraced elements of cybernetics and information theory as the future of the human sciences. A fluent French speaker who taught courses at the Ecole Libre during the war, Jakobson commanded a far-reaching intellectual network in the French-speaking world. Besides his friendship with colleagues such as Lévi-Strauss, also formerly of the Ecole Libre, Jakobson's revival of the work of Ferdinand de Saussure would attract wide notice in postwar French intellectual circles. At the behest of Jakobson, Warren Weaver of the Rockefeller Foundation sent literature on information theory and cybernetics to Lévi-Strauss and Lacan, both in Paris, who soon began incorporating this literature into their own writing (Geoghegan, 2011). The Rockefeller Foundation's missives to Lévi-Strauss and Jakobson followed on decades of effort to promote technocratic approaches in French social science. The Ecole Libre was one of the more decisive and successful steps in this series of efforts, cultivating as it did a distinguished cadre of researchers receptive to the idea of interdisciplinary empirical research. Because the collective writings of Jakobson, Lévi-Strauss, and Lacan helped define structuralist methodologies in France, their common embrace of cybernetic themes played a major role in securing for the jargon of cybernetics

a place within postwar France. In particular, Lévi-Strauss adopted an interpretation of French social scientist Marcel Mauss's social theory, according to which primitive practices of gift-giving constituted systems of cybernetic communication (Lévi-Strauss, 1987; Lévi-Strauss, 1953). This seminal interpretation, which paved the way for a conflation of linguistic, economic, social, and technological systems of "communication," also enabled a technocratic worldview that in turn elided key differences between technological and linguistic communications in thinkers as diverse as Barthes, Baudrillard, philosopher Jacques Derrida, and psychoanalyst Félix Guattari.

While much discussion of cybernetics—in the mid-twentieth century, as now—concerned its promise to usher forth a new technical era of digital machines and human-machine communications, its earliest reception in France reflected a strong awareness of its imbrication with certain political aspirations and its potential to reform scientific collaboration. A review of Wiener's *Cybernetics* in *Le Monde* in 1948 by Dominican priest Dominique Dubarle hailed the new communication science as a prophetic and disturbing study that cast light upon the role that mathematical analysis and computing machines were poised to play in future world governance. Referencing Hobbes' *Leviathan*, Dubarle positioned *Cybernetics* as a contribution to natural and to political science equally. According to his reading, "the human processes which constitute the object of government may be assimilated to games in the sense in which [John] von Neumann has studied them mathematically" (Wiener, 1988: 179). "Perhaps," he added, "it would not be a bad idea for the teams at present creating cybernetics to add to their cadre of technicians, who have come from all horizons of science, some serious anthropologists, and perhaps a philosopher who has some curiosity as to world matters" (Wiener, 1988: 180).

Dubarle's interest in studying cybernetics in an interdisciplinary milieu speaks in part to the legacy of technocracy and technicist thinking in French intellectual and political life. Historian Theodore Porter once noted, "[t]he United States gave us the word 'technocracy,' but France seems to have some claim on the thing itself" (Porter, 1996: 114). With this remark Porter had in mind the privileged role afforded by engineers, statisticians, and other technical experts in administering the French state. The *Ecole Polytechnique*, an elite university for engineers, was born of the French Revolution and founded upon the dream that engineers could build a better, more rational society (Alder, 1997). The positivism of Auguste Comte and Saint-Simonianism celebrated the power of engineering, technology, and reason to reform society. When the *Ecole Pratique des Hautes Etudes* was established in 1868 to conjoin scientific research and educational practice in a single institution (Mazon, 1988: 22-25; Fournier, 2006: 40-43), the founders hoped to institute a faculty that would rival their Teutonic colleagues and further consolidate French national power. It was there that Ferdinand de Saussure and his colleagues, charged with consolidating and promoting the French language in the 1880s and 1890s, would collaborate with physiologists to develop the rudiments of an approach to structural linguistics that was, as noted by historian Robert Brain, "shot through with the political and social interests of the French state, which in key respects were mediated by the phonetics laboratory" (Brain, 1998: 251). In this respect the mid-twentieth century commingling of Saussurean structural linguistics with new research in cybernetics and information theory appeared to fulfill a long dormant ambition to scientize the study of language and communications.

The factors that wed science to technocracy in France, however, also militated against the activities of the Rockefeller Foundation there. Well in to the 1930s more technical fields such as engineering and mathematics received strong support from the French state, while social and economic sciences occupied a marginal place at institutions such as the *Ecole Pratique des Hautes Etudes*. The state had consistently chosen to favor more "applied" sciences in its program of national scientific development (Mazon, 1988: 17-21). Vying strategies of scientific funding also retarded

the development of the social sciences in France. Technocracy, in the French context, meant the authority of a coterie of centralized experts credentialed and underwritten by the state. The American conceptualization of technocracy, by contrast, related to the beneficent effects of private initiatives. Granting officers at American private foundations cultivated cadres of entrepreneurial scientists who would write grants, assemble teams, and keep careful track of accounts while developing practical methods for promoting "social control" independent of the state. This American approach to technocracy tended to favor individual and private initiative, which subtly inflected the theoretical stances underlying supported initiatives, reinforcing the general American preference for empirical social science that supported ideas of individual agency. From this perspective, it is perhaps not surprising that the Rockefeller Foundation made relatively slow progress in France, where not only research but models of social change itself tended towards a more holistic model. Whereas its model of privately funded research and ad hoc institutes was ill-adapted to the entrenched forms of French scientific research, its hope of establishing institutes and research topics autonomous from the university and existing institutions rejected the dominant logic of French science.

The Rockefeller Foundation's vexed relationship with eminent sociologist and anthropologist Mauss provides an instructive example of the American agency's difficulties in France. In 1917, an early incarnation of the Rockefeller Foundation's social sciences division, the Laura Spelman Rockefeller Memorial (LSRM), established an office in Paris as the seat of operations for reforming European social sciences and cultivated relations with Mauss, the favored nephew of Emile Durkheim. Born in 1872, Mauss studied religious sciences at the *Ecole Pratique* in the 1890s and had taught there since the early 1900s. By the 1920s, he was among the most distinguished names in French sociology. The LSRM paid for his travels to the United States in 1926 so that he could learn about the social scientific methods being developed there and also give lectures on French ethnography (Fournier, 2006: 246). This was part of the Rockefeller Foundation's interwar programs for "cross-fertilization" among national scientific communities. Among his various activities, he gave a lecture at Harvard and at the University of Chicago on "The Unity of the Human Sciences and Their Mutual Relationship: Anthropology, Psychology, Social Science." Building on the traditions of Henderson and Dewey and with the support of the Rockefeller Foundation, the University of Chicago at that time had become one of the world's leading centers for the integration of scientific, theoretical, and practical social science. Mauss was impressed, in particular by social scientists' influence in policy circles, (Fournier, 2006: 247-8). hailing the achievement of the "great" American people that had placed "its entire social system, its entire demographic composition, as well as its destiny and its full individuality under the jurisdiction of a practical reason finally enlightened by science and, in any case, rationally managed by scientists and by the people themselves" (Fournier, 2006: 248).

In 1929, at the invitation of the Rockefeller Foundation, Mauss prepared an application to found a new center for social science in Paris Mauss, 1985: 343–351). He proposed the establishment of a faculty of social science at the Ecole Pratique des Hautes Etudes—a so-called "Sixième Section," since it would have been the sixth faculty housed at the Ecole. Mauss argued such a center would gather the scattered activities of French social science under one roof, fostering a form of unity befitting their object of study. "The unity of the social sciences," he wrote in his application, "will be demonstrated only when all teachers and all students, whatever their area of specialization in that vast field, are obliged to meet, and do meet, in a place where the material means for work and contact have been expanded" (Fournier, 2006: 256). The officers of the Rockefeller Foundation, however, balked at his proposal, invoking a number of empirical and methodological concerns: they complained his plans were too vast, too vague, too abstract, and

unlikely to make serious contributions to social control (Fournier, 2006: 256; Mazon 1985: 323-327). They rejected his proposal and instead offered a lavish subvention of $350,000 to Charles Rist, an economist who also served on the governing board of the Bank of France, to establish an institute of economics and social science. The Foundation designated additional funds for training students and smaller grants for more modest initiatives to "familiarize the younger elements at the university with the methods of observation and the work necessary to solve economic, sociological, and political problems" and to develop "true methods for social control" (Fournier, 2006: 293).[iii]

What are we to make of the rejection of Mauss's application? In the world of external funding, the role of caprice, scarcity, and opacity in decision-making militate against a decisive interpretation of any particular decision. Approval implies endorsement while rejection does not necessarily indicate opposition. Yet given the apparent enthusiasm with which members of the Rockefeller Foundation courted Mauss, their ultimate rejection of his proposal is striking. It hints at the disjunction between the methodological-political orientation of Mill and Kittredge and the decided skepticism of Mauss towards technocracy and the pragmatic interventionism of many Rockefeller-funded initiatives. Rockefeller-funded initiatives routinely delimited specific problems among specific populations—e.g., literacy among rural African-Americans, appreciation of "American" traditions at universities, the promotion of Basic English at select Chinese universities, the cultivation of political science in London—and convened committees to promote these ventures. This strategy of intervention corresponded with a rational and technical style of reasoning that studied phenomena in parts (or more precisely, viewed the individual as more foundational than collectives or relations) with the aim of manipulating and reforming individual elements in a society. Mauss's search for "the unity of the social sciences," by contrast, expressed a holistic conception of society that, by definition, rejected the underlying logic—individualistic, atomizing, and oriented towards private initiative—that guided Rockefeller-funded social science of the 1920s and 1930s.

Perhaps more to the point, Mauss viewed this individualizing and calculated pragmatism promoted by the Rockefeller Foundation—and the methods that produced and guided his research—with profound suspicion. Consider *Essai sur le don* (published in English as *The Gift: The Form and Reason for Exchange in Archaic Societies*), Mauss's best-known work, which presented a polemical contribution to political theory in the guise of ethnographic analysis (Mauss 1990). He analyzed how the most local and isolated acts of gift-giving in primitive society produce cycles of reciprocity and debt that gradually impoverish entire tribes. This analysis offered an elegant portrait of how economic, legal, and moral obligations belong to a "total social fact" whose reality exists in the binding relations that encompass the social collective and determines even minute local activities. Mauss's conclusions suggested the inadequacy of any social scientific measurement extracted or abstracted from the social whole. Yet the study also carried with it a trenchant critique of technocracy. Mauss contended that modern societies had tamed wildly fluctuating patterns of gift-giving by refashioning humanity as *homo oeconomicus*, whose commitment to "science and reason" reduced ethics and responsibility to cold actuarial calculations. "For a very long time," he observed, "man was something different, and he has not been a machine for very long, made complicated by a calculating machine" Mauss, 1990: 98). Natural and social sciences, being liberal juridical constructs based on self-possessive individualism, were complicit in the transformation of humanity into a machine and society into a system of mechanically processed inputs and outputs.

Mauss's inquiry expressed a skepticism about liberalism in general and individualism in particular that characterized French political philosophy from Rousseau to Durkheim (Douglas 1990). The Rockefeller Foundation's initiatives, by contrast, were grounded in a commitment to modernization based on improved technocratic and rationalist social engineering, the division of

social problems in tractable data sets, and ultimately the cultivation of liberal-individualist subjects who—through their bootstrapping enterprise—would contribute to community, economy, and nation. Their very program of grant-giving presumed that experts in the United States, empowered by the largesse and reason of their benefactor, could freely identify "sectors" for scientific reform and as such empower exceptional scientific individuals to liberate reason from tradition. Though quite suited to the privatized, localized, and de-centralized networks of American higher education, this research program proved (and, to some extent, proves) unsuited for the rigid, centralized, and techno-bureaucratic-statist framework of French education. Moreover, couched within these activities were covert political and philosophical assumptions about the constitution of science and the framework for reason itself, which varied according to the American and French traditions. While Mauss's reflections on the gift brought these philosophical differences into relief, they also furnished an oblique critique of the presumptions (or presumptuousness) of Rockefeller initiatives. To facilitate a true reform, a much more thoroughgoing rearrangement of French and American scientific, educational, and philosophical priorities was in order.

Lévi-Strauss, Technocrat

Despite its reputation for visionary technological proposals, cybernetics—Wiener's synthesis of ideas from computing, electrical engineering, and biology around notions of communication—showed the greatest success in its ability to align social theory with mundane problems of technical administration. Leading facilitators of cybernetics including Margaret Mead, Gregory Bateson, Frank Fremont-Smith, Heinz von Foerster, Warren Weaver, Wilbur Schramm divided their time between scientific research and administrative work on behalf of foundations, public institutions, and interdisciplinary research units. It is, then, perhaps no surprise that cybernetics found such enthusiastic patronage from private foundations renowned for their commitment to technocratic social science, including the Rockefeller Foundation, the Ford Foundation, the Wenner-Gren Foundation, and the Josiah Macy, Jr. Foundation. Nuclear threats to social order, political control, schizophrenia, and colonial violence are only a few of the "problems" which social scientists, drawing in cybernetics, showed to be communication breakdowns in want of technical adjustments (Mead, 1969; Heims, 1991; Light, 2003: 35-36; Deutsch, 1963; Batson et al, 1956; Povinelli, 2018). Cybernetics, with its recourse of concepts such as encoding, decoding, information, feedback, entropy, and system, purified social analysis of disturbing political conclusions, lending to social scientists the appearance of cool and dispassionate scientism.

In this context, Lévi-Strauss's embrace of cybernetics in the 1950s—and his use of cybernetics to recuperate Mauss for a formalist and rationalist postwar structural methodology—takes on an ineluctable political meaning. Coming on the heels of his stint at the Rockefeller-funded Ecole Libre, Lévi-Strauss's decisive role shaping the introduction of cybernetics into French social theory belongs to a wider story of the postwar importation of American technocracy into France. Lévi-Strauss's championing of cybernetics in postwar France fits neatly within a much a broader reformation of French society under the modernizing impetus of the Marshall Plan and other projects stamped by American industry. The basis of these reforms, however, cannot be reduced to cybernetic analysis alone. Rather, it resided within frameworks of institutional expertise and technocratic collaboration, of which the Ecole Libre was but one embodiment. Consider Lévi-Strauss's success at the Ecole Libre of securing alignments among multifarious political, scholarly, and intellectual agendas. While at the Ecole he demonstrated himself to be a skilled administrator, particularly at the interface of French and American bureaucracies. Lévi-Strauss worked with various government bodies—French and American—throughout the war, with an eye to

supporting the Americans' "Good Neighbor" policy towards Latin America and lacing together elements of French, Latin American, and US-American communities of interest.[iv]

More than once, Lévi-Strauss's facility negotiating the interface between political administration and social science brought him to the concerned attention of the U. S. Federal government. Shortly before his arrival to the United States, an anonymous informant from Poughkeepsie, New York wrote a postcard to J. Edgar Hoover identifying Lévi-Strauss as part of a cabal of "Jewish international communists," and thus brought him to the attention of the FBI.[v] As Lévi-Strauss undertook the management of the center at the Ecole Libre, FBI agents began intercepting his mail and making inquiries in New York. They scrupulously inventoried Lévi-Strauss's prewar undertakings in South America, his work at the Ecole Libre, and his various activities consulting and broadcasting speeches for the U. S. government. Hoover did not like what he saw. In one ominous memo, he noted a recent informant's claim that Lévi-Strauss and one of his colleagues in the propaganda services, Surrealist André Breton, were "closely connected with a group in Mexico which is very bad, having something on their minds different from what the rest of us have on our minds."[vi] A few years later, at the war's end, Lévi-Strauss, by then a cultural attaché in service of the French government, shocked a representative with the OSS (the forerunner of the CIA) with the intimation of his belief that "it might have been better to kill 50,000 [French] collaborationists immediately" than undertake an arduous process of political trials (Mehlman, 2000: 181).

Over the latter half of the 1940s and well into the 1950s, Lévi-Strauss applied these finely-honed political skills to cultivating exchange between France and the United States. Following the landings in Normandy in 1944, de Gaulle's government summoned Lévi-Strauss to Paris to represent the state in helping French intellectuals visit the United States. War had left the French universities in disrepair and isolation from colleagues abroad, and Lévi-Strauss—by dint of his wartime experience and avid loyalty to de Gaulle—was deemed ideally suited to re-articulate relations and exchanges between the two nations' universities. In 1945, he returned to the United States as Cultural Attaché to the French Embassy, where he continued in a similar capacity, assisting the likes of Jean-Paul Sartre, Simone de Beauvoir, and Albert Camus as they made their way to and in the United States (Wilcken, 2010: 154). As a representative of the Ecole, Lévi-Strauss, along with physicist Pierre Auger, met with Rockefeller Foundation officers to discuss plans for the future of the Ecole Libre. Lévi-Strauss proposed re-establishing l'Ecole Libre as a new center in Paris to be called "the French-European American Foundation."[vii] Lengthy negotiations, and additional support secured from the Ford Foundation, resulted in the establishment of the long-sought but never before realized *Sixième Section* of the *Ecole Pratique*, later renamed *Ecole des Hautes Etudes en Sciences Sociales* (EHESS).

How did Lévi-Strauss succeed at securing a rapprochement among American philanthropies and French institutions, exactly where his eminent predecessor Mauss had failed? Commenting on the origins of the school, latter-day faculty member Pierre Bourdieu once complained that the EHESS was an instrument of "social control" deployed by American foundations to counteract Marxist criticism (Bourdieu, 1988: i). This is true, but the new instruments of control depended on a new infrastructure of administrators, technocrats, and methods that permitted an interface between American and French institutions. Lévi-Strauss was prepared to support that infrastructure in a manner Mauss never could. He and a large contingent of colleagues had cultivated relationships, methods, and purposes throughout the war that established the possibility for a new partnership. In short, Lévi-Strauss became something of a professional administrator during these years, including his appointment as 1952 Secretary General at UNESCO, where he championed the use of cybernetics as a social scientific tool for

political management (Bertholet, 2008: 211-13; Lévi-Strauss, 1976a; Lévi-Strauss, 1954).[viii]

In this embrace of cybernetics alongside an accumulation of technocratic roles and responsibilities, Lévi-Strauss followed a well-trodden path already marked out by aforementioned cybernetic experts such as Mead and Bateson. Where Mauss elaborated social theories that seemed to sabotage the epistemological and administrative aims of American technocracy and its handmaidens in social science, Lévi-Strauss seized upon the language of cybernetics and preached its message at major international conferences. In the hands of Lévi-Strauss, social theory, technocratic administration, and intercultural mediation aligned. Perhaps more remarkably, their alignment took place under the sign of a cybernetic Mauss, whom he construed as a cybernetician *avant la technique*. Much as Mead and Bateson reinterpreted the Culture and Personality school of anthropology in cybernetic terms, thereby accommodating it to the technocratic dictates of postwar behavioral sciences, Lévi-Strauss's reading of Mauss ingeniously—some would say insidiously—brought cybernetic reason into a certain discursive concordance with the grand traditions of French social sciences. This was an administrative and scientific maneuver, to be sure, but it was also a political maneuver—that is, it took a position on how fundamental conflicts in society were to be defined, endorsing scientistic solutions whose truth resided in the purity of mathematics and machinery rather than the messy contingency of historical reason.

Cybernetic Synthesis

Lévi-Strauss's first explicit essay to assimilate cybernetics with French social science appeared in his idiosyncratic 1950 introduction to the collected works of Marcel Mauss. Lévi-Strauss reinterpreted Mauss's *Essai sur le Don* as proof that "the ethnological problem is a problem of communication" (Lévi-Strauss, 1987: 36). Recall that Mauss contrasted the exchange of gifts in primitive society to the highly technical and mathematical schemes of modern liberalism. Lévi-Strauss boldly conflated these two positions, arguing that the binding together of primitive societies by means of gift-giving manifested the communicative and cybernetic dimension of society in its elementary state. In this reading Mauss's reconstruction of an isolated act as a larger system of reciprocal exchange opened the door to a wider reconceptualization of ethnography as a communication science. In other words, the structure and rules of such everyday exchange should be suitable for informatic or computational analysis.

In the introduction Lévi-Strauss criticized Mauss for putting forth non-scientific notions, such as the fortuitous and the arbitrary, in explaining the origins of certain native practices and concepts (Lévi-Strauss, 1987: 56) and he offered mathematical alternatives as their substitute, drawing directly on Jakobson's recent work with structural linguistics and information theory. "[S]ocial anthropology," he wrote, "can hope to benefit from the immense prospects opened up to linguistics itself, through the application of mathematical reasoning to the study of phenomena of communication [such as cybernetics and information theory].... [A] large number of ethnological and sociological problems ... are only waiting upon the goodwill of mathematicians who could enable ethnologists collaborating with them to take decisive steps forward, if not yet to a solution of those problems, at least to a preliminary unification of them, which is the condition of their solution" (Lévi-Strauss, 1987: 44).[ix] As in his studies of kinship, mathematics intervened to offer the formal "solution" to intractable morasses of historical. social, and phenomenological data. Cybernetics and information theory—devised for the purposes of recuperating or stabilizing communications in technical media—became exemplars of the new mathematical methods that could recuperate disorder, noise, and contingency in human social systems. Most decisive for his ongoing rapprochement of American and French schools of social science, Lévi-Strauss's interpretation of Mauss neutralized the most contentious and polemical aspects of Mauss's

ethnography—which were also precisely those dimensions that put Mauss at odds with American proponents of scientific philanthropy.

The rapid industrialization underway in France, spearheaded by armies of experts and corporations sponsored by the postwar Marshall Plan, shaped the wider context of intelligibility (or perhaps plausibility) of Lévi-Strauss's synthesis of French sociology with American communication engineering. In her cultural history of postwar France, *Fast Cars, Clean Bodies*, Kristin Ross observes that the rapid transformation of France from an agrarian to industrial nation (an industrialism notably dominated by IBM rather than Ford, at that) set loose new products and new desires that reworked the fabric of French society. Educated middle managers, durable consumer goods such as the automobile, and functionalist social sciences all at once "burst onto a society that still cherished prewar outlooks with all the force, excitement, disruption, and horror of the genuinely new" (Ross, 1995:4). The modernization of French universities attended these transformations. The establishment of the *Sixième Section* embodied one aspect of this new modernizing spirit, the rise of structuralism another.

Meanwhile, cybernetics seeped into French postwar society along a number of channels parallel to that of Lévi-Strauss. In 1950, the same year that Lévi-Strauss published his new interpretation of Mauss, Wiener returned to Paris in 1950 to lecture at the Collège de France. This time he returned to a growing audience of interested scientists and members of the lay public. Major reviews and commentaries in *Le Monde*, *Esprit,* and *La Nouvelle revue française,* as well as attacks in the Marxist press, had brought cybernetics to broader if controversial attention (Mindell, Gerovitch, and Segal, 2002: 76, 79). During his visit, Wiener lectured on Radio France and disseminated articles and interviews on his work with the French press. Szolem's nephew Benoît Mandelbrot, who had copyedited the original text of *Cybernetics* and would become a noted contributor to mathematical theories of information in his own right (Mindell, Gerovitch, and Segal, 2002: 76, 80),[x] co-organized a Rockefeller-funded conference on "Computing Machines and Human Thought" during Wiener's stay at the Collège de France, with computer scientist Howard Aiken, cybernetician Warren McCulloch, and information theorist Donald MacKay among the attendees (Mindell, Gerovitch, and Segal, 2002: 80). Cybernetic themes also cropped up in engineer-turned-novelist Alain Robbe-Grillet's experimental writings (Ross, 1995; Schmidgen, n.d.),Jean-Luc Godard's dystopian depiction of a state run by computers, and in the real-life efforts by the French *Préfecture de Police* to automate their *fichiers* with IBM computers in order to identify and track Algerian terrorists (MacMaster, 2010).

Particularly in this broader context that framed cybernetics as part of projects in (American) modernization and political management, Lévi-Strauss's synthesis of Mauss and cybernetics elicited indignation and opposition from intellectuals whose intellectual orientations were more classically French and Marxist. The *Cahiers Internationaux de Sociologie,* in particular, became an important forum for resisting structural anthropology as Lévi-Strauss defined it. Chief among the opponents was George Gurvitch, who had taught with Lévi-Strauss at the Ecole Libre and had invited him to write the introduction to the work of Mauss. Although displeased with Lévi-Strauss's introduction, he allowed its publication (Wilcken, 2010: 177-178). In an essay entitled "The Concept of Social Structure" and published in the *Cahiers*, Gurvitch argued that Lévi-Strauss's recourse to mathematics tended to efface the social and internal contradictions of the societies he studied, replacing the unpredictable tensions constitutive of society with an ahistorical mathematical symmetry (Gurvitch, 1955). Essays by Alain Touraine and Henri Lefebvre on American social science and the concepts of totality radicalized the critique by introducing a stronger emphasis on the role of class domination in social-scientific reason (Touraine, 1954; Lefebvre, 1955). These theorists argued that the Marxist (and French) conception of totality

remained sensitive to contradictions but that newer approaches associated with American methods invoked styles of calculation and analysis to neutralize conflict and a true sense of the social totality.

Throughout the 1950s and 1960s, Lefebvre in particular would refine this critique into a damning indictment of structuralism. In the 1958 essay "Marxism and the Theory of Information," for example, he ridiculed structuralists' claim that techniques for measuring telegraph transmissions provided suprahistorical procedures for understanding anthropological and sociological arrangements. He dismissively labelled cybernetics and information theory as a science of "apparatuses [*dispositifs*] that maintain and consolidate a *structure* which has been determined within and by an information machine" (Lefebvre, 1971: 72). In other words, Lefebvre suggested that structuralists ontologized and universalized the artifactual and contingent structures of machines. In a response to his Marxist critics, Lévi-Strauss insisted that it was necessary to "distinguish scientific findings, strictly speaking, from the political and ideological uses to which they are put, all too frequently, in the United States and elsewhere...." (Lévi-Strauss, 1976b)

CECMAS and Semiotics

In the burgeoning field of French semiotics, however, cybernetic notions of code, information, communication, and entropy secured a major foothold, thanks in large part to institutional and administrative challenges tied to interdisciplinary coordination and the quest to legitimize a new field of study. Specifically, the language of cybernetics offered seemingly neutral technical frameworks that could be referred to by scholars of diverse specialties and even ideological preferences. These dynamics were most notably the case at the *Centre d'Etudes des Communications de Masse* (CECMAS) (Center for the Study of Mass Communications), the cradle of French semiotics in the pivotal 1960s. Georges Friedmann, a sociologist who regularly contributed to the *Cahiers Internationaux de Sociologie*, founded CECMAS at the Sixième Section at the Ecole Pratique des Hautes Etudes in 1960. But unlike the *Cahiers*, where cybernetic structuralism undermined a common identity elaborated around Maussian and Marxist critiques of capitalist technocracy and its myths, cybernetic discourse contributed to formation of an intellectual community at CECMAS. Sociologists, linguists, and critics of diverse stripes populated the center, giving the jargon of cybernetics and information theory a greater currency than that of sociology or linguistics. Scholars schooled in Maussian and Saussurean traditions of analysis, of whom there were many, could converge around the strange mélange of structural and informatic tropes innovated by Jakobson and Lévi-Strauss. Indeed, the center seemed to realize visions by Dubarle, Lévi-Strauss and the Rockefeller Foundation of a center for scientific, experimental, and empirical research; and it reflected the kind of interdisciplinary communication Jakobson had already undertaken at MIT with colleagues at MIT's Research Laboratory of Electronics (RLE) (Cherry, Halle and Jakobson, 1953; Jakobson and Halle, 1956; Jakobson, Fant, and Halle, 1963).[xi]

The roles that scientific administration and institutionalization played in fostering cybernetic discourse at CECMAS mirrored that of the American institutions of communication research it sought to emulate. Recently founded institutions in the United States with ties to communications research—such as the Mental Research Institute (home to Bateson and "the Palo Alto School") and the Institute for Communications Research (ICR) (home to Wilbur Schramm, who spearheaded the publication of Shannon and Weaver's *The Mathematical Theory of Communication*)—found in cybernetic paradigms a resource for coordinating the unwieldy disciplinary spread of its members. The language of information also offered an intellectual framework conducive to the pursuit of external funding, thus lending currency to experimental and emerging topics around ill-defined objects. Directors of CECMAS identified Columbia's Bureau of Applied Social Research (institutional home to Paul Lazarsfeld of the Macy Conferences

on Cybernetics), Schramm's ICR, and communications theorist Bernard Berelson (founder of the Center for Advanced Studies in the Behavioral Sciences, a leading sponsor of researchers in cybernetics, information theory, AI, and systems theory) as models (Anonymous, 1961; Samoyault, 2017: 203). Lazarsfeld himself had even attended the inaugural planning meeting for CECMAS, with Barthes and Edgar and Violette Morin, whom Friedmann enjoined not to leave the study of audiovisual communications "all to the Americans" (Samoyault, 2017: 203). This attempt to meet American colleagues in the field of communications research reproduced problems, languages, and institutional dynamics that cybernetics, as an exemplary discourse of technocratic management, proved fit to address.

But, by the 1960 establishment of CECMAS, a neutral application of cybernetic discourse proved difficult. At that point Jakobson and Lévi-Strauss, not to mention Wiener himself, had been touting the importance of cybernetics around Paris for close to a decade. And in that time the critiques of cybernetics and information theory had been widely disseminated in the French intellectual scenes. Besides the skeptical commentaries of Gurvitch and Lefebvre, Georges Canguilhem and even Jacques Lacan had publicly questioned the neutrality of informatic models (Geroulanos, 2015: 141; Lacan, 2001: 148). A brisk literature in French on technocracy as a method of industrial domination (closely intertwined with a burgeoning interest in bureaucracy) had also sprung up with notable contributions by Touraine, Nora Mitrani, and Claude Lefort, among others (Touraine, 1959; Meynaud, 1960; Meynaud, 1960; Mitraina, 1960; Fougeyrollas, 1960; Lefort, 1960; Touraine, 1960; Hecht, 2009).[xii] Together, commentaries compromised the ability of cybernetics to merely facilitate scientific collaboration in a new center, all the more so for the fact that it was a center oriented towards taking a major research area from the United States and securing for it a foothold in somewhat recently occupied postwar Paris: the capital of a nation still in the throes of industrial restructuring, modelled by "human engineering," "management," and other fields of research imported from the United States (Boltanski, 1981).

The researchers at CECMAS faced something of a conundrum. The administrative and interdisciplinary tasks confronting the institute, and the intellectual terrain it chose to address, invited a turn towards cybernetic reasoning. Insofar as they wanted to join a larger intellectual discussion with their American contemporaries in communications research, a turn towards the jargon of information theory, already deeply embedded in the structuralist paradigm, provided a nearly instantaneous avenue towards participation in this wider international conversation. Yet the intellectual milieu in which CECMAS had, if not discredited, at least called into profound question the neutrality of cybernetic and informational models, particularly insofar as they related to a technocratic refashioning of France since World War II, CECMAS itself embodied. These suspect associations were not deep secrets hidden in the archives of policy decisions by American scientific advisors, but were matters of public debate in some of the leading intellectual circles in Paris. In such a situation, was it more advised to reject cybernetic reasoning altogether or to rehabilitate it by distinguishing, as Lévi-Strauss had done, between its scientific uses and ideological abuses?

Between rejection and rehabilitation, researchers of CECMAS chose a third path: Irony. Perhaps owing to the concentration of literary-minded intellectuals associated with CECMAS, its scholars made the productivity of cybernetic discourse a topic for thematization within their own application of that terminology to the analysis of discourse. The result was an experimental—in both the scientific and artistic senses of the word—mode of writing that theorized inscription while ironically thematizing the historical and political aspects of communication. Through coursework, conferences, and the center's in-house journal *Communications*, researchers at CECMAS imaginatively intermingled the aspirations of American empirical social science with French structuralism and Marxist critique. These divided alliances were manifest in the center's

membership. Friedmann was a regular contributor to the Marxist-leaning *Cahiers Internationaux de Sociologie* but others had affiliations with the structural and semiotic programs carried on in the name of Saussure, Jakobson, and Lévi-Strauss. Counted among this latter group were Barthes (then a director of studies at the Ecole Pratique), as well as a class of up and coming graduate students and young lecturers, including literary critics Julia Kristeva, Gérard Genette, and Tzvetan Todorov; film theorist Christian Metz; and sociologist Jean Baudrillard. Noted lecturers from abroad, among them Umberto Eco, occasionally taught at the center as well. Although divided by disciplinary training, national backgrounds, and political allegiance, together they developed a critical synthesis that borrowed from the scientistic aspirations of structuralism, the interpretive vocabularies of cybernetics and information theory, and a sensitivity to the historicity and socially situated productivity of science as identified by the likes of Canguilhem and even Lacan. A sense of artful showmanship also pervaded the work of many of the center's contributors, with scholars frequently interweaving performative bravado and analytical rigor in their scholarly activities.

Irony and Informatics

In its early days the center and its members showed something resembling eccentric faithfulness to cybernetics and information theory. Among other things, cybernetic language provided an ideal vehicle for exorcising a Sartrean existentialism becoming quickly passé in avant-garde French intellectual circles. Remarking on Barthes's transition from a Sartrean to a structuralist paradigm, intellectual historian François Dosse observed that "[e]xistentialism as a philosophy of subjectivity and of the subject, came under attack and the subject and conscience gave way to rules, codes, and structure" (Dosse, 1998: 5). Cybernetic reliance on statistical series and on patterned distributions irreducible to human intention (but demonstrably present in human speech and action) provided an extraordinary tool for characterizing the consistency and agency of language and the arts without recourse to the conscience or human intentionality. As Barthes put it in the introduction to *Elements of Semiology*, a primer prepared while he was working at CECMAS: "There is no doubt that the development of mass communications confers particular relevance today upon the vast field of signifying media, just when the success of disciplines such as linguistics, information theory, [and] formal logical and structural anthropology provide semantic analysis" (Barthes, 1968: 9). According to Barthes, the development of these fields prompted a "demand for semiology" (Barthes, 1968: 9).

Yet Barthes, too, rejected the possibility of establishing a universal science, cybernetic or otherwise, that would escape the historical circumstances of its own production. As he deployed the tropes of cybernetics and information theory, he also submitted their procedures to ideological and historical critique. Consider his 1961 essay "*Le message photographique*," published in the inaugural issue of *Communications*, which reinterpreted the schematic account of communication introduced by Shannon and adapted by Jakobson to poetics.[xiii] Source, message, transmitter (or sender), signal, code, channel, receiver, and destination comprised all the elements of Shannon's communication schema. Well into the early 1960s scholars accepted these as elements of a neutral technological (for Shannon) or formal (for Jakobson) framework. In the 1960s and 1970s some French linguists, notably A. J. Greimas and Georges Mounin, came to argue that the model was ill-suited to linguistic analysis, constrained as it was by the origins of the theory in the industrial problem of economically transmitting signals across media. Barthes, by contrast, embraced both the model and its historical production, arguing in effect that semiotic analysis could deploy these two elements in mutual interrogation of one another. Taking the example of the press photograph, Barthes suggested:

> The press photograph is a message. Considered overall this message is formed by a source of emission, a channel of transmission and a point of reception. The source of emission is the staff of the newspaper, the group of technicians certain of whom take the photo…. The point of reception is the public which reads the paper. As for the channel of transmission, this is the newspaper itself.... (Barthes, 1977: 15)

Barthes twisted this schema to propose a historical and ideological critique of language. In Barthes's hands the concept of the "code" that put a message into a signal no longer aimed to strip all communication down to an ideal technoscientific essence that transcended individual utterances. Instead the code suggested a dimension of concealment, conspiracy, and occlusion in language. As Barthes explained:

> Every [semiotic] code is at once arbitrary and rational; recourse to a code is thus always an opportunity for man to prove himself, to test himself through a reason and a liberty. In this sense, the analysis of codes perhaps allows an easier and surer historical definition of a society than the analysis of its signifieds. (Barthes, 1977: 31)

In Barthes's view, code consisted of the more or less prefabricated set of connotations available to the producer of a message. No message could be produced without a code, and the code marked the historical and political constraints that acted upon any communication. Code, conceived by Shannon as a techno-economic strategy for transmitting signals, morphed in Barthes's hands into the embodiment of political and textual patterns shaping an enunciation. Much as engineers could elicit a proximate definition of the limits and probabilities governing a given communication system, the semiotician could define the limits and probabilities—historical and political in origin—that governed a system of signs. Barthes offered a semiotic and scientific method for examining how history and ideology constituted a code, and that code in turn shaped the relative liberty of the readers, writers, and critics deploying that code. Over the course of the next decade this conception of code would travel across CECMAS, coming to mark the writings of Baudrillard, Metz, and other affiliates.

This approach, which transvalued both science and critique through reference to technical media, tended towards a radical critique of cybernetics and information theory. In equating codes with a historically and politically constituted order, cybernetics and information theory, in their emphasis upon producing more efficient, compact, and abbreviated codes, were reconstituted as components of a contingent, technocratic apparatus. But rather than overturning or rejecting cybernetic methods outright, semiotic analysis turned to the problem of decoding. On the one hand, this meant an analysis and explanation of codes covertly governing communications, as in the press photograph. But it also meant a new effort to strip away the codes structuring everyday life, as well as a celebration of those aberrant and everyday methods of reading that revealed or rejected the hidden ideological content of communications. Again, it was Barthes who was at the forefront of this new analysis. His celebrated book *S/Z*, the result of a seminar he taught at CECMAS from 1968 to 1969, upset the entire cybernetic system. Barthes argued that the essence of Balzac's novella *Sarrasine* lay not in its exquisite encoding, but rather its decoding. He defined the text as "readerly" in order to designate the multitude of conflicting codes that were operative within the text, constantly interfering with the possibility of eliciting a single code or meaning. He likened it to a "telephone network gone haywire" and claimed that it reversed the logic of formal sciences, such as cybernetics and structural linguistics:

> One might call idyllic the communication which unites two partners sheltered from any "noise" (in the cybernetic sense of the word), linked by a simple destination, a single thread.

> Narrative communication is not idyllic; its lines of destination are multiple, so that any message in it can be properly defined only if it is specified whence it comes and where it is going.... Thus, in contrast to idyllic communication, to pure communication (which would be, for example, that of the formalized sciences), readerly writing stages a certain "noise," it is the writing of noise, of impure communication; but this noise is not confused, massive, unnamable; it is a clear noise made up of connections, not superpositions: it is of a distinct "cacography." (Barthes, 1974: 131-2)

While strategically retaining concepts of code, encoding, redundancy, and communication to define the readerly text, Barthes radically redefined it in opposition to efficient procedures of communication engineering. The flight from noise, which organized Wiener's and Shannon's endeavors, was here inverted: the readerly and narrative text staged a noise that was no longer confused or erroneous. Cybernetics was reduced to a science of properly and orderly encoding, to orthography, while semiotics—in its evolving alliance with Marxism—was a science of the improper and errant code: cacography.

A similar set of negotiated readings proliferated across the institute and among its associates over the next few years. Kristeva cited Norbert Wiener's research on models as a resource for developing a "science of critique" that would be coextensive with a "critique of science" (Kristeva, 1986: 74-89). This analysis made explicit the reflexive task of analysis to deploy scientific systems but also interrogate their imbrication with systems of power and domination. Metz theorized cinema as code, opening the door to a generation of ideological critiques of film. Baudrillard's book *The System of Objects*, based on a seminar he taught at CECMAS (Anonymous, 1969: 211), directed its readers' attention towards "a cybernetic imaginary mode whose central myth will no longer be that of the absolute interrelatedness of the world" (Baudrillard, 1996: 127) In his follow-up 1972 essay "Requiem for the Media," he directly attacked communication theory as a vehicle of contemporary oppression and accused Jakobson of its propagation. "This theory is accepted practically everywhere, strengthened by received evidence and a (highly scientific) formalization by one discipline, the semio-linguistics of communication, supported on one side by structural linguistics, by information theory on the other" (Baudrillard, 1981: 178), Baudrillard complained. In this account, theorization became a vehicle for erasing the historical foundations of a particular mode of practice and thereby promoting its ability to enforce new norms of society. "The entire conceptual infrastructure of this theory is ideologically connected with dominant practice, as was and still is that of classical political economy. It is *the* equivalent of this political economy in the field of communication" (Baudrillard, 1981: 178).[xiv]

Baudrillard's conflation of structuralism, cybernetics, and the contemporary structures of political and economic oppression resembled that of his former advisor, Lefebvre. And although it was prepared as part of a brutal, post-'68 polemic against left-wing appropriations of communication theory, there was also something mundanely factual about its assertion that the rise of information theory in universities was "ideologically connected with dominant practice." While Baudrillard likely had no knowledge of the ideological agendas that led the Rockefeller Foundation to shepherd the development of social sciences and cybernetics in France, and certainly knew nothing of the CIA's covert funding for Lévi-Strauss's cybernetics seminar held at UNESCO in the 1950s, Baudrillard astutely discerned that the frameworks of cybernetics, information theory, and game theory, when transposed into the human sciences, remained rigidly oriented towards mapping out the assumptions of industrial engineering. But what sharply distinguished Baudrillard's critique of information theory in the humanities from that of Lefebvre (or Chomsky, for that matter[xv]), was his insistence on semiotic insight. As he put it, "[Communication science] is

the equivalent of this political economy in the field of communication." Rather than rejecting communication as such, Baudrillard ironically embraced it as the map of meaning that rendered the new economies of global communication intelligible. It was not a "false" model ill-suited for sociological or literary analysis; it was the perverted model that accurately construed the logic of new economies based on a system of simulation and electronic communications.

Changing conditions in the university itself, embodied by CECMAS, amplified this sense of political economy reworking cultural production. On the heels of the founding of the Ecole Pratique, research centers of applied social science proliferated in France according to a model of research borrowed in part from the United States, in part from emerging culture industries. Lévi-Strauss's *Laboratoire d'anthropologie sociale*, the closest he came to founding the sort of interdisciplinary research centers that colleagues such as Jakobson and Clyde Kluckhohn (an anthropologist interested in cybernetics and working at Harvard) had at their disposal in the United States, provided a paradigm of the new working model. These centers embraced a form of long-term and large-scale research completed in teams, often working across specialties. It is worth citing at some length the remarks made by Bourdieu in 1989 regarding the changing structures of research in France since the 1960s:

> The change in the structure of intellectual establishments (which is itself governed by the change in industrial establishments) and the increased complexity of technology combine to force many holders of cultural capital to abandon their status as unattached cultural producers or small independent inventors for that of salaried cultural producers integrated into research teams endowed with expensive equipment and involved in long-term projects. This process of relative dispossession, which first took place in the domain of the exact sciences … now affects the domain of the human sciences…(Bourdieu, 1996)

Under these circumstances, fields such as linguistics ceded ground to technical endeavors such as communication studies, cybernetics, or even industrial research of the sort modelled by the administrative research undertaken by the Princeton Radio Project in the United States in the 1930s. The new prestige surrounding social science in France in the 1950s, particularly of the cybernetic variety promoted by Jakobson and Lévi-Strauss, reflected at the level of academic research the changes occurring on the larger scale of political economy.

The widespread appearance of cybernetic themes in 1960s French human sciences are indissociable from the political and industrial conditions shaping the rise of interdisciplinary research, and particularly of studies linked to the concept of communication generally. Alongside the work of CECMAS, a number of seminal theorists in the 1960s and 1970s addressed these changes through their reflections of cybernetics and communication, including Gilbert Simondon (*L'individuation psychique et collective*), Jacques Derrida (*Of Grammatology*), Michel Serres (esp. *Hermes I*, *Hermes II*, and *The Parasite*), and Gilles Deleuze and Félix Guattari (*Anti-Oedipus*). These works conjoined a critique of structuralist idealism with a critical sense for the political stakes of cybernetic reason. Their reflections offer a partial record of how a certain cadre of post-structuralist intellectuals negotiated the reworking of the universities where they, as young intellectuals, sought to make their careers while also establishing the intellectual relevance of their ideas. These thinkers, including Barthes, Metz, Kristeva, Baudrillard, and Luce Irigary, completed their advanced graduate qualification in the course of the 1950s or 1960s and entered a French university under the sway of social scientific modernization. Bourdieu's hint at the ambivalent appropriative power of the new intellectual trends, whereby intellectuals permitted their agendas to be appropriated by intellectual models that they themselves, in their aforementioned writings, would in turn reappropriate to their own intellectual aims. As supposedly autonomous intellectual exercises gave way to abstract systems of bureaucratic management, the structuralist language of codes,

structures, rules, and programs provided an intellectual handle to grapple with these transformations.

From Technocracy to Textocracy

The foregoing analysis suggests that a common intellectual experience, relating to the technocratic refashioning of French universities, drove a group of French scholars associated with semiotics to not only grapple with cybernetic themes, but also take up the language of communications as both critical instrument and object of reflection. In lieu of a story of opposition or subordination to cybernetic (or American) intellectual imperialism, what emerges from the intellectual itinerary that shuttles between the Rockefeller Foundation, Marcel Mauss, Wiener and his Continental interlocutors, Lévi-Strauss, CECMAS, and the communications-minded French thinkers labelled post-structuralist, is a tale of mutual appropriation. In this unfolding of thought, the language and institutions of cybernetics played a multifaceted role of affiliation and distanciation, by which cybernetics radically disrupted intellectual traditions linked to Mauss, phenomenology, and existentialism, introducing instead new paradigms of thought that privileged notions of structure, code, rules, and program—which in turn complemented the broader move towards technocratic administration in French industry, government, and universities. For example, under the impetus of U. S. funding, Mauss's critical rejection of technology and calculation as basis for a holistic theory of society gave way to concepts of communication (Lévi-Strauss) and code (Barthes) that took technical mediation as a model for social theory. Even when critical of cybernetic concepts, these new intellectual positions maintained a productive relationship with the intellectual constraints of technocracy.

How might we name this productive reworking of cybernetic discourse and its technocratic legacies? Whatever their differences and oppositions, the writings of Barthes or Baudrillard and even Lévi-Strauss (1) questioned the myth of frictionless technocratic communication, either by valorizing gaps within primitive thought (Lévi-Strauss's floating signifiers) or by emphasizing the oppressive powers shaping cultural coding (Barthes), while (2) embracing technical inscription linked to cybernetics as a model of cultural production and social order. In effect, these theorists substituted for an American and cybernetic mythology of technocracy a new mythology, that of *textocracy*.[xvi] In embracing the notion that machinery, inscription, and techniques pervaded nearly every aspect of social and cultural communications, and in tracing cybernetic themes back to the origins of Western thought, they swapped the technocratic myth of society as machinery (and in want of improved engineering) for a textocratic myth of writing, documentation, technical supplementation, and code as the foundation of Western traditions. They exchanged for the fantasy of transparent and immediate communications a new dream of pervasive writing as the foundation of social order and political power. This project rendered material and palpable the covert technical and political machinations at work in structuralist theory, ontologizing those machinations into a worldview that saw science, epistemology, society, and psychology as springing from the scriptural trace.

Although the romance with textocracy waned in France by the mid-1970s, the recent push across North America and Europe for the founding of new laboratories of digital humanities invites us to reconsider the continuing lessons to be taught by the textocratic moment. For example, scholars might do well to interrogate the oft-repeated mantra that practical exercises in the digital humanities offer a historical break with theoretically oriented literary criticism. Exemplary in this instance are the remarks of one of the leading practitioners of the digital humanities, Franco Moretti, who writes of his exercises in computer-aided "distant reading" that "while recent literary theory was turning for inspiration towards French and German metaphysics, I kept thinking that

there was actually much more to be learned from the natural and the social sciences…." (Moretti, 2005) Towards this end Moretti has taken operationalization, among other computational and numerical inquiries, as the foundation for a new method based on digital humanities (Moretti, 2013: 103-19). Much could be said about the permutations that attended the importation of postwar French thought into American, Italian, and other national-university contexts. Yet it is hard to imagine an intellectual endeavor more resonant with the spirit of postwar French theory than the search for operational principles disclosed by computation and other modes drawn from social and natural sciences. Indeed, it was the turn towards mathematics, social science, computation, and operations that propelled structural anthropology and structural linguistics to the forefront of postwar intellectual debates, particularly in France, and there laid the groundwork for a new theoretically-oriented literary criticism. If there's nothing wrong with revising the possibilities of computer-aided investigation and models drawn from the sciences, it is equally worthwhile to keep in mind how such fantasies already occupy a dominant position in the formation of literary and textual studies since World War II.

Perhaps more importantly, the lesson of textocracy may be that, historically speaking, the embrace of abstract computational rules and scientific models, far from allowing the scholar to take flight from metaphysics and politics, instead allowed each to take refuge in the other. Indeed, it forged political and material constraints that, in turn, enabled new consistencies that cut across university and industry, natural science and human science, thanks to the organization of teams and centers whose very existence constituted an event in the history of political economy and modernization. If CECMAS is any example, this does not mean that such endeavors should be avoided as merely "applied" or even as somehow political. Yet the intellectual impact of such endeavors may come less from the application of computing to the humanities than from the reflexive task of adapting criticism to reflection on computational applications and to the political or historical scope of its own intellectual horizons.

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[i] I borrow the term umbrella discipline from Kline although he used the term in a slightly different context and elsewhere).

[ii] Additional details drawn from correspondence in the Norbert Wiener Papers at the MIT Archives.

[iii] Among those who benefitted from this largesse was Lévi-Strauss, at that time a young ethnographer whose missions in the Brazilian jungle (later recounted in *Tristes Tropiques*) were underwritten by the Rockefeller-funded *Institut d'Ethnologie* (Mazon, 1988: 57). The general paucity of fieldwork funding meant these investigations were the first, and ultimately the only, ethnographic fieldwork Lévi-Strauss had the opportunity to carry out early in his career. In fulfillment of the Rockefeller strategy, however, those individualistic and concrete observations became a cornerstone of Lévi-Strauss's subsequent social, political, and ethical reflections.

[iv] "Claude Levi-Strauss," Collection Refugee Scholars—New School, RG 1.1, Series 200, Box 54, Folder 632, Rockefeller Archive Center (hereafter RAC).

[v] Hoover to Special Agent in Charge, 17 April 1941. FBI Archives. Special thanks to John Cook formerly of gawker.com, who furnished me with copies of Lévi-Strauss's FBI files, which he secured through a Freedom of Information Act request.

[vi] Hoover to SAO (New York), 3 March, 1942. FBI Archives.

[vii] Lévi-Strauss to John Marshall, August 1944, Collection Rockefeller Foundation, Record Group 1.1, Series 200, Box 52, Folder 610, RAC.

[viii] Camille Robcis has written on the application of structuralism to social adminsitration more generally (Ithaca: Cornell University Press, 2013).

[ix] The references inserted in the brackets stand in for a footnote Lévi-Strauss had referring to recent work on

cybernetics and information theory by Wiener, Shannon, and Weaver.

[x] Couffignal's interests in cybernetics were later summarized in a monograph (Couffignal, 1972).

[xi] For more on the interdisciplinary research context that cultivated the culture of the RLE, see Morris Halle, "Rooms to Grow In," *Preservation* 51, no. 5 (October 1999): 48–54.

[xii] For the themed issue on bureaucracy, *Arguments* 4, no. 17 (First Trimester 1960).

[xiii] Barthes's essay fits within a process history disenchantment with information theory and its communication schema that unfolded in France from the 1950s through the 1960s. On this history of importation and re-evaluation, see the essay by Georges Mounin originally published in 1966, "Communication, Linguistics and Information Theory" (Mounin, 1985); the lecture from 1970 Algirdas Julien Greimas, "Semiotics and Social Communication" (Mounin, 1987); and the remarks in Francesco Casetti in *Semiotica* (Casetti, 1977: 48–88).

[xiv] Italicization in the original..

[xv] Noam Chomsky persuasively showed that information theory alone could not produce adequate models of natural language. Rather, grammar was needed. For Chomsky this was an essentially scientific and experimental question, without recourse to politics except, perhaps, at a higher level of humanist abstraction concerning the nature of human endowments and their distinctions from machines. Baudrillard, by contrast, insists on the political meaning of the conflation of information theory and linguistics in the 20th century. For Chomsky's intervention, see *Syntactic Structures* (1957).

[xvi] Markus Krajewski also uses this term in a fascinating but slightly different context. (Krajewski, 2014).

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